

**REVISIONS TO THE STATE IMPLEMENTATION PLAN  
FOR THE CONTROL OF OZONE AIR POLLUTION**

**ATTAINMENT DEMONSTRATION FOR THE  
HOUSTON/GALVESTON  
OZONE NONATTAINMENT AREA**

**Appendix E**

**Future Case Modeling Results**

**TEXAS NATURAL RESOURCE CONSERVATION COMMISSION  
PO BOX 13087  
AUSTIN, TEXAS 78711-3087**

**FEBRUARY 20, 1998**

# List of COAST UAM Year 2007 Modeling Runs for September 6-11, 1993 Episode

#	Date	Run Name	Description	UAM
1	07/12/97	07.base.regular	Same meteorological input data as the UAM-V v1.24 year 1993 base case modeling run (93.base.regular) and projected year 2007 EI data with the lateral boundary conditions and initial conditions extracted from the Texas regional UAM-V v1.24 year 2007 modeling results (COAST coarse 16x6km domain and HGBPA fine grid 4x4km sub-domain)	UAM-V v1.24
2	07/12/97	07.base.regular.000N000V	Case #1 with 0% NOx and 0% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
3	07/14/97	07.base.regular.090pN100V	Case #1 with 90% point NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
4	07/14/97	07.base.regular.075pN100V	Case #1 with 75% point NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
5	07/14/97	07.base.regular.050pN100V	Case #1 with 50% point NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
6	07/15/97	07.base.regular.025pN100V	Case #1 with 25% point NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
7	07/15/97	07.base.regular.000pN100V	Case #1 with 0% point NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
8	07/16/97	07.base.regular.100N090V	Case #1 with 100% NOx and 90% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
9	07/16/97	07.base.regular.100N075V	Case #1 with 100% NOx and 75% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
10	07/16/97	07.base.regular.100N050V	Case #1 with 100% NOx and 50% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
11	07/17/97	07.base.regular.100N025V	Case #1 with 100% NOx and 25% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
12	07/17/97	07.base.regular.100N000V	Case #1 with 100% NOx and 0% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
13	07/18/97	07.base.regular.095pN095V	Case #1 with 95% point NOx and 95% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
14	07/18/97	07.base.regular.090pN090V	Case #1 with 90% point NOx and 90% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
15	07/20/97	07.base.regular.075pN075V	Case #1 with 75% point NOx and 75% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
16	07/20/97	07.base.regular.050pN050V	Case #1 with 50% point NOx and 50% VOC anthropogenic emissions in COAST domain	UAM-V v1.24

**List of COAST UAM Year 2007 Modeling Runs for September 6-11, 1993 Episode**

#	Date	Run Name	Description	UAM
17	07/21/97	07.base.regular.025pN025V	Case #1 with 25% point NOx and 25% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
18	07/21/97	07.base.regular.000pN000V	Case #1 with 0% point NOx and 0% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
19	07/21/97	07.base.regular.095N095V	Case #1 with 95% NOx and 95% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
20	07/22/97	07.base.regular.090N090V	Case #1 with 90% NOx and 90% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
21	07/22/97	07.base.regular.075N075V	Case #1 with 75% NOx and 75% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
22	07/22/97	07.base.regular.050N050V	Case #1 with 50% NOx and 50% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
23	07/23/97	07.base.regular.025N025V	Case #1 with 25% NOx and 25% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
24	07/23/97	07.base.regular.090N100V	Case #1 with 90% NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
25	07/23/97	07.base.regular.075N100V	Case #1 with 75% NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
26	07/24/97	07.base.regular.050N100V	Case #1 with 50% NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
27	07/24/97	07.base.regular.025N100V	Case #1 with 25% NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
28	07/24/97	07.base.regular.000N100V	Case #1 with 0% NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
29	07/25/97	07.base.regular.075pN050V	Case #1 with 75% point NOx and 50% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
30	07/25/97	07.base.regular.075N050V	Case #1 with 75% NOx and 50% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
31	07/25/97	07.base.regular.075pN025V	Case #1 with 75% point NOx and 25% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
32	07/27/97	07.base.regular.075N025V	Case #1 with 75% NOx and 25% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
33	07/27/97	07.base.regular.075pN000V	Case #1 with 75% point NOx and 0% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
34	07/27/97	07.base.regular.075N000V	Case #1 with 75% NOx and 0% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
35	07/28/97	07.base.regular.050pN075V	Case #1 with 50% point NOx and 75% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
36	07/28/97	07.base.regular.050N075V	Case #1 with 50% NOx and 75% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
37	07/28/97	07.base.regular.050pN025V	Case #1 with 50% point NOx and 25% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
38	07/29/97	07.base.regular.050N025V	Case #1 with 50% NOx and 25% VOC anthropogenic emissions in COAST domain	UAM-V v1.24

# List of COAST UAM Year 2007 Modeling Runs for September 6-11, 1993 Episode

#	Date	Run Name	Description	UAM
39	07/30/97	07.base.regular.050pN000V	Case #1 with 50% point NOx and 0% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
40	07/30/97	07.base.regular.050N000V	Case #1 with 50% NOx and 0% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
41	07/30/97	07.base.regular.025pN075V	Case #1 with 25% point NOx and 75% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
42	07/30/97	07.base.regular.025N075V	Case #1 with 25% NOx and 75% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
43	07/31/97	07.base.regular.025pN050V	Case #1 with 25% point NOx and 50% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
44	07/31/97	07.base.regular.025N050V	Case #1 with 25% NOx and 50% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
45	07/31/97	07.base.regular.025pN000V	Case #1 with 25% point NOx and 0% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
46	07/31/97	07.base.regular.025N000V	Case #1 with 25% NOx and 0% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
47	08/01/97	07.base.regular.000pN075V	Case #1 with 0% point NOx and 75% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
48	08/01/97	07.base.regular.000N075V	Case #1 with 0% NOx and 75% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
49	08/01/97	07.base.regular.000pN050V	Case #1 with 0% point NOx and 50% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
50	08/01/97	07.base.regular.000N050V	Case #1 with 0% NOx and 50% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
51	08/03/97	07.base.regular.000pN025V	Case #1 with 0% point NOx and 25% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
52	08/03/97	07.base.regular.000N025V	Case #1 with 0% NOx and 25% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
53	08/07/97	07.base.coast_cut_bc.000N000V	Case #1 with 0% NOx and 0% VOC anthropogenic emissions in COAST domain and the BCs and IC extracted from the Texas regional UAM-V v1.24 modeling with 0% NOx and 0% VOC anthropogenic emissions inside COAST sub-domain	UAM-V v1.24
54	08/15/97	07.base.nonatt_rural.025pN100V	Case #1 with 25% point NOx and 100% VOC anthropogenic emissions in HGBPA nonattainment rural areas	UAM-V v1.24
55	08/15/97	07.base.nonatt_rural.050pN100V	Case #1 with 50% point NOx and 100% VOC anthropogenic emissions in HGBPA nonattainment rural areas	UAM-V v1.24

List of COAST UAM Year 2007 Modeling Runs for September 6-11, 1993 Episode				
#	Date	Run Name	Description	UAM
56	08/15/97	07.base.nonatt_rural.075pN100V	Case #1 with 75% point NOx and 100% VOC anthropogenic emissions in HGBPA nonattainment rural areas	UAM-V v1.24
57	08/18/97	07.base.nonatt_rural.025pN025V	Case #1 with 25% point NOx and 25% VOC anthropogenic emissions in HGBPA nonattainment rural areas	UAM-V v1.24
58	08/18/97	07.base.nonatt_rural.050pN025V	Case #1 with 50% point NOx and 25% VOC anthropogenic emissions in HGBPA nonattainment rural areas	UAM-V v1.24
59	08/18/97	07.base.nonatt_rural.075pN025V	Case #1 with 75% point NOx and 25% VOC anthropogenic emissions in HGBPA nonattainment rural areas	UAM-V v1.24
60	08/18/97	07.base.nonatt_rural.100N025V	Case #1 with 100% NOx and 25% VOC anthropogenic emissions in HGBPA nonattainment rural area	UAM-V v1.24
61	08/21/97	07.base.regular.075maN100V	Case #1 with 75% mobile and area NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
62	08/22/97	07.base.regular.050maN100V	Case #1 with 50% mobile and area NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
63	08/22/97	07.base.regular.025maN100V	Case #1 with 25% mobile and area NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
64	08/22/97	07.base.regular.000maN100V	Case #1 with 0% mobile and area NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
65	08/26/97	07.base.regular.075mN100V	Case #1 with 75% mobile NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
66	08/26/97	07.base.regular.050mN100V	Case #1 with 50% mobile NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
67	08/26/97	07.base.regular.025mN100V	Case #1 with 25% mobile NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
68	08/26/97	07.base.regular.000mN100V	Case #1 with 0% mobile NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
69	08/27/97	07.base.regular.075aN100V	Case #1 with 75% area NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
70	08/27/97	07.base.regular.050aN100V	Case #1 with 50% area NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24

**List of COAST UAM Year 2007 Modeling Runs for September 6-11, 1993 Episode**

#	Date	Run Name	Description	UAM
71	08/27/97	07.base.regular.025aN100V	Case #1 with 25% area NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
72	08/28/97	07.base.regular.000aN100V	Case #1 with 0% area NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
73	09/05/97	07.base.ship_indus.075pN100V	Case #1 with 75% point NOx and 100% VOC anthropogenic emissions in Houston ship channel and industrial area	UAM-V v1.24
74	09/05/97	07.base.ship_indus.050pN100V	Case #1 with 50% point NOx and 100% VOC anthropogenic emissions in Houston ship channel and industrial area	UAM-V v1.24
75	09/05/97	07.base.ship_indus.025pN100V	Case #1 with 25% point NOx and 100% VOC anthropogenic emissions in Houston ship channel and industrial area	UAM-V v1.24
76	09/05/97	07.base.ship_indus.000pN100V	Case #1 with 0% point NOx and 100% VOC anthropogenic emissions in Houston ship channel and industrial area	UAM-V v1.24
77	08/15/97	07.base.nonatt_rural.000pN100V	Case #1 with 0% point NOx and 100% VOC anthropogenic emissions in HGBPA nonattainment rural areas	UAM-V v1.24
78	09/15/97	07.base.bpa_indus.075pN100V	Case #1 with 75% point NOx and 100% VOC anthropogenic emissions in BPA urban and industrial area	UAM-V v1.24
79	09/15/97	07.base.bpa_indus.050pN100V	Case #1 with 50% point NOx and 100% VOC anthropogenic emissions in BPA urban and industrial area	UAM-V v1.24
80	09/15/97	07.base.bpa_indus.025pN100V	Case #1 with 25% point NOx and 100% VOC anthropogenic emissions in BPA urban and industrial area	UAM-V v1.24
81	09/15/97	07.base.bpa_indus.000pN100V	Case #1 with 0% point NOx and 100% VOC anthropogenic emissions in BPA urban and industrial area	UAM-V v1.24
82	09/16/97	07.base.ship_indus.100N075pV	Case #1 with 100% NOx and 75% point VOC anthropogenic emissions in Houston ship channel and industrial area	UAM-V v1.24
83	09/16/97	07.base.ship_indus.100N050pV	Case #1 with 100% NOx and 50% point VOC anthropogenic emissions in Houston ship channel and industrial area	UAM-V v1.24
84	09/16/97	07.base.ship_indus.100N025pV	Case #1 with 100% NOx and 25% point VOC anthropogenic emissions in Houston ship channel and industrial area	UAM-V v1.24
85	09/16/97	07.base.ship_indus.100N000pV	Case #1 with 100% NOx and 0% point VOC anthropogenic emissions in Houston ship channel and industrial area	UAM-V v1.24

**List of COAST UAM Year 2007 Modeling Runs for September 6-11, 1993 Episode**

#	Date	Run Name	Description	UAM
86	09/16/97	07.base.bpa_indus.100N075pV	Case #1 with 100% NOx and 75% point VOC anthropogenic emissions in BPA industrial area	UAM-V v1.24
87	09/16/97	07.base.bpa_indus.100N050pV	Case #1 with 100% NOx and 50% point VOC anthropogenic emissions in BPA industrial area	UAM-V v1.24
88	09/17/97	07.base.bpa_indus.100N025pV	Case #1 with 100% NOx and 25% point VOC anthropogenic emissions in BPA industrial area	UAM-V v1.24
89	09/17/97	07.base.bpa_indus.100N000pV	Case #1 with 100% NOx and 0% point VOC anthropogenic emissions in BPA industrial area	UAM-V v1.24
90	09/19/97	07.base.texas_city.100N075pV	Case #1 with 100% NOx and 75% point VOC anthropogenic emissions in Texas City industrial area	UAM-V v1.24
91	09/19/97	07.base.texas_city.100N050pV	Case #1 with 100% NOx and 50% point VOC anthropogenic emissions in Texas City industrial area	UAM-V v1.24
92	09/19/97	07.base.texas_city.100N000pV	Case #1 with 100% NOx and 0% point VOC anthropogenic emissions in Texas City industrial area	UAM-V v1.24
93	09/20/97	07.base.texas_city.100N025pV	Case #1 with 100% NOx and 25% point VOC anthropogenic emissions in Texas City industrial area	UAM-V v1.24
94	09/22/97	07.base.regular.015uN100V	Case #1 with 15% utility NOx and 100% VOC anthropogenic emissions in entire COAST domain	UAM-V v1.24
95	09/23/97	07.base.houston.100N075mV	Case #1 with 100% NOx and 75% mobile VOC anthropogenic emissions in Houston urban core area	UAM-V v1.24
96	09/23/97	07.base.houston.100N050mV	Case #1 with 100% NOx and 50% mobile VOC anthropogenic emissions in Houston urban core area	UAM-V v1.24
97	09/23/97	07.base.houston.100N025mV	Case #1 with 100% NOx and 25% mobile VOC anthropogenic emissions in Houston urban core area	UAM-V v1.24
98	09/23/97	07.base.houston.100N000mV	Case #1 with 100% NOx and 0% mobile VOC anthropogenic emissions in Houston urban core area	UAM-V v1.24
99	09/24/97	07.base.houston.075mN100V	Case #1 with 75% mobile NOx and 100% VOC anthropogenic emissions in Houston urban core area	UAM-V v1.24
100	09/24/97	07.base.houston.050mN100V	Case #1 with 50% mobile NOx and 100% VOC anthropogenic emissions in Houston urban core area	UAM-V v1.24

# List of COAST UAM Year 2007 Modeling Runs for September 6-11, 1993 Episode

#	Date	Run Name	Description	UAM
101	09/24/97	07.base.houston.025mN100V	Case #1 with 25% mobile NOx and 100% VOC anthropogenic emissions in Houston urban core area	UAM-V v1.24
102	09/24/97	07.base.houston.000mN100V	Case #1 with 0% mobile NOx and 100% VOC anthropogenic emissions in Houston urban core area	UAM-V v1.24
103	09/25/97	07.base.houston.100N075aV	Case #1 with 100% NOx and 75% area VOC anthropogenic emissions in Houston urban core area	UAM-V v1.24
104	09/25/97	07.base.houston.100N050aV	Case #1 with 100% NOx and 50% area VOC anthropogenic emissions in Houston urban core area	UAM-V v1.24
105	09/25/97	07.base.houston.100N025aV	Case #1 with 100% NOx and 25% area VOC anthropogenic emissions in Houston urban core area	UAM-V v1.24
106	09/25/97	07.base.houston.100N000aV	Case #1 with 100% NOx and 0% area VOC anthropogenic emissions in Houston urban core area	UAM-V v1.24
107	09/25/97	07.base.houston.075aN100V	Case #1 with 75% area NOx and 100% VOC anthropogenic emissions in Houston urban core area	UAM-V v1.24
108	09/25/97	07.base.houston.050aN100V	Case #1 with 50% area NOx and 100% VOC anthropogenic emissions in Houston urban core area	UAM-V v1.24
109	09/26/97	07.base.houston.025aN100V	Case #1 with 25% area NOx and 100% VOC anthropogenic emissions in Houston urban core area	UAM-V v1.24
110	09/26/97	07.base.houston.000aN100V	Case #1 with 0% area NOx and 100% VOC anthropogenic emissions in Houston urban core area	UAM-V v1.24
111	09/26/97	07.base.houston.075maN100V	Case #1 with 75% mobile NOx, 75% area NOx and 100% VOC anthropogenic emissions in Houston urban core area	UAM-V v1.24
112	09/26/97	07.base.houston.050maN100V	Case #1 with 50% mobile NOx, 75% area NOx and 100% VOC anthropogenic emissions in Houston urban core area	UAM-V v1.24
113	09/26/97	07.base.houston.025maN100V	Case #1 with 25% mobile NOx, 75% area NOx and 100% VOC anthropogenic emissions in Houston urban core area	UAM-V v1.24
114	09/26/97	07.base.houston.000maN100V	Case #1 with 0% mobile NOx, 75% area NOx and 100% VOC anthropogenic emissions in Houston urban core area	UAM-V v1.24
115	09/29/97	07.base.hg_nonatt.075N100V	Case #1 with 75% NOx and 100% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24



List of COAST UAM Year 2007 Modeling Runs for September 6-11, 1993 Episode				
#	Date	Run Name	Description	UAM
116	09/29/97	07.base.hg_nonatt.050N100V	Case #1 with 50% NOx and 100% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
117	09/29/97	07.base.hg_nonatt.025N100V	Case #1 with 25% NOx and 100% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
118	09/30/97	07.base.hg_nonatt.000N100V	Case #1 with 0% NOx and 100% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
119	09/30/97	07.base.hg_nonatt.100N075V	Case #1 with 100% NOx and 75% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
120	09/30/97	07.base.hg_nonatt.100N050V	Case #1 with 100% NOx and 50% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
121	09/30/97	07.base.hg_nonatt.100N025V	Case #1 with 100% NOx and 25% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
122	10/01/97	07.base.hg_nonatt.100N000V	Case #1 with 100% NOx and 0% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
123	10/01/97	07.base.bpa_nonatt.075N100V	Case #1 with 75% NOx and 100% VOC anthropogenic emissions in BPA nonattainment area	UAM-V v1.24
124	10/01/97	07.base.bpa_nonatt.050N100V	Case #1 with 50% NOx and 100% VOC anthropogenic emissions in BPA nonattainment area	UAM-V v1.24
125	10/01/97	07.base.bpa_nonatt.025N100V	Case #1 with 25% NOx and 100% VOC anthropogenic emissions in BPA nonattainment area	UAM-V v1.24
126	10/02/97	07.base.bpa_nonatt.000N100V	Case #1 with 0% NOx and 100% VOC anthropogenic emissions in BPA nonattainment area	UAM-V v1.24
127	10/02/97	07.base.hg_nonatt.075N075V	Case #1 with 75% NOx and 75% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
128	10/02/97	07.base.hg_nonatt.050N050V	Case #1 with 50% NOx and 50% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
129	10/03/97	07.base.hg_nonatt.025N025V	Case #1 with 25% NOx and 25% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
130	10/03/97	07.base.hg_nonatt.000N000V	Case #1 with 0% NOx and 0% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24

# List of COAST UAM Year 2007 Modeling Runs for September 6-11, 1993 Episode

#	Date	Run Name	Description	UAM
131	10/03/97	07.base.bpa_nonatt.075N075V	Case #1 with 75% NOx and 75% VOC anthropogenic emissions in BPA nonattainment area	UAM-V v1.24
132	10/03/97	07.base.bpa_nonatt.050N050V	Case #1 with 50% NOx and 50% VOC anthropogenic emissions in BPA nonattainment area	UAM-V v1.24
133	10/03/97	07.base.bpa_nonatt.025N025V	Case #1 with 25% NOx and 25% VOC anthropogenic emissions in BPA nonattainment area	UAM-V v1.24
134	10/03/97	07.base.bpa_nonatt.000N000V	Case #1 with 0% NOx and 0% VOC anthropogenic emissions in BPA nonattainment area	UAM-V v1.24
135	10/06/97	07.base.coast-j-g-h.015uN100V	Case #1 with 15% utility NOx and 100% VOC anthropogenic emissions anthropogenic emissions in COAST domain except Jefferson, Galveston, and Harris Counties	UAM-V v1.24
136	10/07/97	07.alt_i.regular.100N100V	Case #1 with alternative I EI. Alternative I EI Adjustment Factors: SOURCE: Point Mobile Area Biogenic VOC: 1.25 2.00 1.30 0.30 NOX: 0.75 0.80 0.25 1.00	UAM-V v1.24
137	10/07/97	07.alt_i.regular.075N100V	Case #136 (alternative I EI) with 75% NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
138	10/07/97	07.alt_i.regular.050N100V	Case #1 (alternative I EI) with 50% NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
139	10/07/97	07.alt_i.regular.025N13600V	Case #136 (alternative I EI) with 25% NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
140	10/08/97	07.alt_i.regular.000N13600V	Case #136 (alternative I EI) with 0% NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
141	10/08/97	07.alt_i.regular.13600N075V	Case #136 (alternative I EI) with 13600% NOx and 75% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
142	10/08/97	07.alt_i.regular.13600N050V	Case #136 (alternative I EI) with 13600% NOx and 50% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
143	10/09/97	07.alt_i.regular.13600N025V	Case #136 (alternative I EI) with 13600% NOx and 25% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
144	10/09/97	07.alt_i.regular.13600N000V	Case #136 (alternative I EI) with 13600% NOx and 0% VOC anthropogenic emissions in COAST domain	UAM-V v1.24

List of COAST UAM Year 2007 Modeling Runs for September 6-11, 1993 Episode				
#	Date	Run Name	Description	UAM
145	10/09/97	07.alt_i.regular.075N075V	Case #136 (alternative I EI) with 75% NOx and 75% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
146	10/09/97	07.alt_i.regular.050N050V	Case #136 (alternative I EI) with 50% NOx and 50% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
147	10/10/97	07.alt_i.regular.025N025V	Case #136 (alternative I EI) with 25% NOx and 25% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
148	10/10/97	07.alt_i.regular.000N000V	Case #136 (alternative I EI) with 0% NOx and 0% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
149	10/10/97	07.alt_ii.regular.100N100V	Case #1 with alternative II EI. Alternative II EI Adjustment Factors: SOURCE: Point Mobile Area Rural Biogenic Rural Biogenic VOC: 1.25 2.00 1.30 0.60 1.00 NOx: 0.75 0.80 0.25 1.00 1.00	UAM-V v1.24
150	10/10/97	07.alt_ii.regular.075N100V	Case #149 (alternative II EI) with 75% NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
151	10/11/97	07.alt_ii.regular.050N100V	Case #149 (alternative II EI) with 50% NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
152	10/12/97	07.alt_ii.regular.025N100V	Case #149 (alternative II EI) with 25% NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
153	10/10/97	07.alt_ii.regular.000N100V	Case #149 (alternative II EI) with 0% NOx and 100% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
154	10/10/97	07.alt_ii.regular.100N075V	Case #149 (alternative II EI) with 100% NOx and 75% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
155	10/11/97	07.alt_ii.regular.100N050V	Case #149 (alternative II EI) with 100% NOx and 50% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
156	10/10/97	07.alt_ii.regular.100N025V	Case #149 (alternative I EI) with 100% NOx and 25% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
157	10/11/97	07.alt_ii.regular.100N000V	Case #149 (alternative I EI) with 100% NOx and 0% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
158	10/10/97	07.alt_ii.regular.000N000V	Case #149 (alternative I EI) with 0% NOx and 0% VOC anthropogenic emissions in COAST domain	UAM-V v1.24

List of COAST UAM Year 2007 Modeling Runs for September 6-11, 1993 Episode				
#	Date	Run Name	Description	UAM
159	10/13/97	07.alt_ii.regular.075N075V	Case #149 (alternative I EI) with 75% NOx and 75% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
160	10/13/97	07.alt_ii.regular.050N050V	Case #149 (alternative I EI) with 50% NOx and 50% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
161	10/13/97	07.alt_ii.regular.000N000V	Case #149 (alternative I EI) with 0% NOx and 0% VOC anthropogenic emissions in COAST domain	UAM-V v1.24
162	10/21/97	07.base.hg_nonatt.035N100V	Case #1 with 35% NOx and 100% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
163	10/21/97	07.base.hg_nonatt.030N100V	Case #1 with 30% NOx and 100% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
164	10/21/97	07.base.hg_nonatt.020N100V	Case #1 with 20% NOx and 100% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
165	10/21/97	07.base.hg_nonatt.015N100V	Case #1 with 15% NOx and 100% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
166	10/27/97	07.base.hg_nonatt.090N090V	Case #1 with 90% NOx and 90% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
167	10/28/97	07.base.hg_nonatt.075N090V	Case #1 with 75% NOx and 90% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
168	10/29/97	07.base.hg_nonatt.085N085V	Case #1 with 85% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
169	10/29/97	07.base.hg_nonatt.075N085V	Case #1 with 75% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
170	10/30/97	07.base.hg_nonatt.080N085V	Case #1 with 80% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
171	10/30/97	07.base.hg_nonatt.070N085V	Case #1 with 70% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
172	11/03/97	07.base.hg_nonatt.065N085V	Case #1 with 65% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
173	11/03/97	07.base.hg_nonatt.060N085V	Case #1 with 60% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24

List of COAST UAM Year 2007 Modeling Runs for September 6-11, 1993 Episode				
#	Date	Run Name	Description	UAM
174	11/04/97	07.base.hg_nonatt.080N080V	Case #1 with 80% NOx and 80% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
175	11/04/97	07.base.hg_nonatt.075N080V	Case #1 with 75% NOx and 80% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
176	11/04/97	07.base.hg_nonatt.070N080V	Case #1 with 70% NOx and 80% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
177	11/05/97	07.base.hg_nonatt.050N085V	Case #1 with 50% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
178	11/07/97	07.base.hg_nonatt.045N085V	Case #1 with 45% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
179	11/07/97	07.base.hg_nonatt.040N085V	Case #1 with 40% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
180	11/08/97	07.base.hg_nonatt.030N085V	Case #1 with 30% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
181	11/08/97	07.base.hg_nonatt.025N085V	Case #1 with 25% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
182	11/10/97	07.base.hg_nonatt.035N085V	Case #1 with 35% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
183	11/10/97	07.base.hg_nonatt.020N085V	Case #1 with 20% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
184	11/12/97	07.base.hg_nonatt.055N085V	Case #1 with 55% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
185	11/13/97	07.base.out_bpa_nonatt.000N000V	Case #1 with 0% NOx and 0% VOC anthropogenic emissions outside BPA nonattainment area and EPA standard background values for BCs and IC.	UAM-V v1.24
186	11/17/97	07.base.hg_nonatt.015N085V	Case #1 with 15% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
187	11/17/97	07.base.hg_nonatt.010N085V	Case #1 with 10% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
188	11/17/97	07.base.hg_nonatt.005N085V	Case #1 with 5% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24

# List of COAST UAM Year 2007 Modeling Runs for September 6-11, 1993 Episode

#	Date	Run Name	Description	UAM
189	11/17/97	07.base.hg_nonatt.000N085V	Case #1 with 0% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
190	11/18/97	07.alt_i.hg_nonatt.050N085V	Case #136 with 50% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
200	11/18/97	07.alt_i.hg_nonatt.040N085V	Case #136 with 40% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
201	11/18/97	07.alt_i.hg_nonatt.020N085V	Case #136 with 20% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
202	11/19/97	07.alt_i.hg_nonatt.030N085V	Case #136 with 30% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
203	11/19/97	07.alt_ii.hg_nonatt.050N085V	Case #149 with 50% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
204	11/19/97	07.alt_ii.hg_nonatt.040N085V	Case #149 with 40% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
205	11/19/97	07.alt_ii.hg_nonatt.030N085V	Case #149 with 30% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
206	11/19/97	07.alt_ii.hg_nonatt.020N085V	Case #149 with 20% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
207	12/26/97	07.otag_5c.hg_nonatt.050N085V	Case #149 with BCs and IC extracted from the Texas regional UAM-V year 2007 modeling with OTAG 5c emissions controls, OTAG 5c emissions controls outside HG nonattainment area, and 50% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
208	12/26/97	07.otag_5c.hg_nonatt.040N085V	Case #207 with 40% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
209	12/26/97	07.otag_5c.hg_nonatt.030N085V	Case #207 with 30% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24
208	12/26/97	07.otag_5c.hg_nonatt.020N085V	Case #207 with 20% NOx and 85% VOC anthropogenic emissions in HG nonattainment area	UAM-V v1.24

**Summary of Urban Airshed Modeling  
Results for Houston-Galveston  
April, 1998 Attainment Demonstration**

**October 20, 1997**

**J. H. Smith, Ph.D.**

**T.N.R.C.C.  
Air Quality Planning  
and Assessment**

## **Background on the Coastal Oxidant Assessment for Southeast Texas (COAST) Modeling**

- The upper Texas coast is characterized by a complex mixture of emissions and highly complex coastal meteorological patterns.
- The 1993 COAST intensive field study included enhanced meteorological and air quality monitoring, advanced emissions inventory methodologies.
- Modeling for COAST was conducted using an advanced prognostic meteorological model (SAIMM) and the variable-grid version of Urban Airshed Model (UAM-V).
- Of four COAST episodes initially modeled, best performance achieved with September 8-11, 1993 episode. All exceedance days meet EPA performance criteria.
- September 8-11 episode will be used for April, 1998 attainment demonstration.
- Emissions inventory projected to 2007 using econometric forecasts; adopted controls on VOC sources are applied to projections.
- Future-year boundary conditions established through multi-state regional modeling.
- SIP modeling staff have conducted over 150 six-day simulations to test various NO<sub>x</sub>, VOC, and combined NO<sub>x</sub> & VOC reductions, applied domain-wide and in specific geographic areas.



## **Episode Selection and Model Performance**

- **Originally modeled four episodes incorporating results of the COAST field study:**
  - **October 23-25, 1992**
  - **August 16-20, 1993**
  - **August 31-September 2, 1993**
  - **September 6-11, 1993**
- **Model could not successfully replicate observed data for either October 23-25, 1992, or August 16-20, 1993 episode.**
- **August 31-September 2, 1993 episode was selected primarily for Beaumont. (Houston-Galveston area peak ozone was 164 ppb on Sept. 1, well below design value of 210 ppb).**
- **September 6-11, 1993 episode had four consecutive exceedance days in Houston-Galveston, with high ozone in Beaumont-Port Arthur (one exceedance day).**
- **Model performance meets EPA criteria for both areas for four days of interest:**

### **Houston-Galveston Model Performance Summary**

<b>Episode Day</b>	<b>Measured Peak O<sub>2</sub></b>	<b>Modeled Peak O<sub>2</sub></b>	<b>Δ Peak (15-20%)</b>	<b>Relative Bias (5-15%)</b>	<b>Gross Error (30-35%)</b>
September 8, 1993	214	176	-18%	2%	24%
September 9, 1993	195	177	-9%	4%	26%
September 10, 1993	162	179	10%	-10%	23%
September 11, 1993	189	187	-1%	-2%	21%

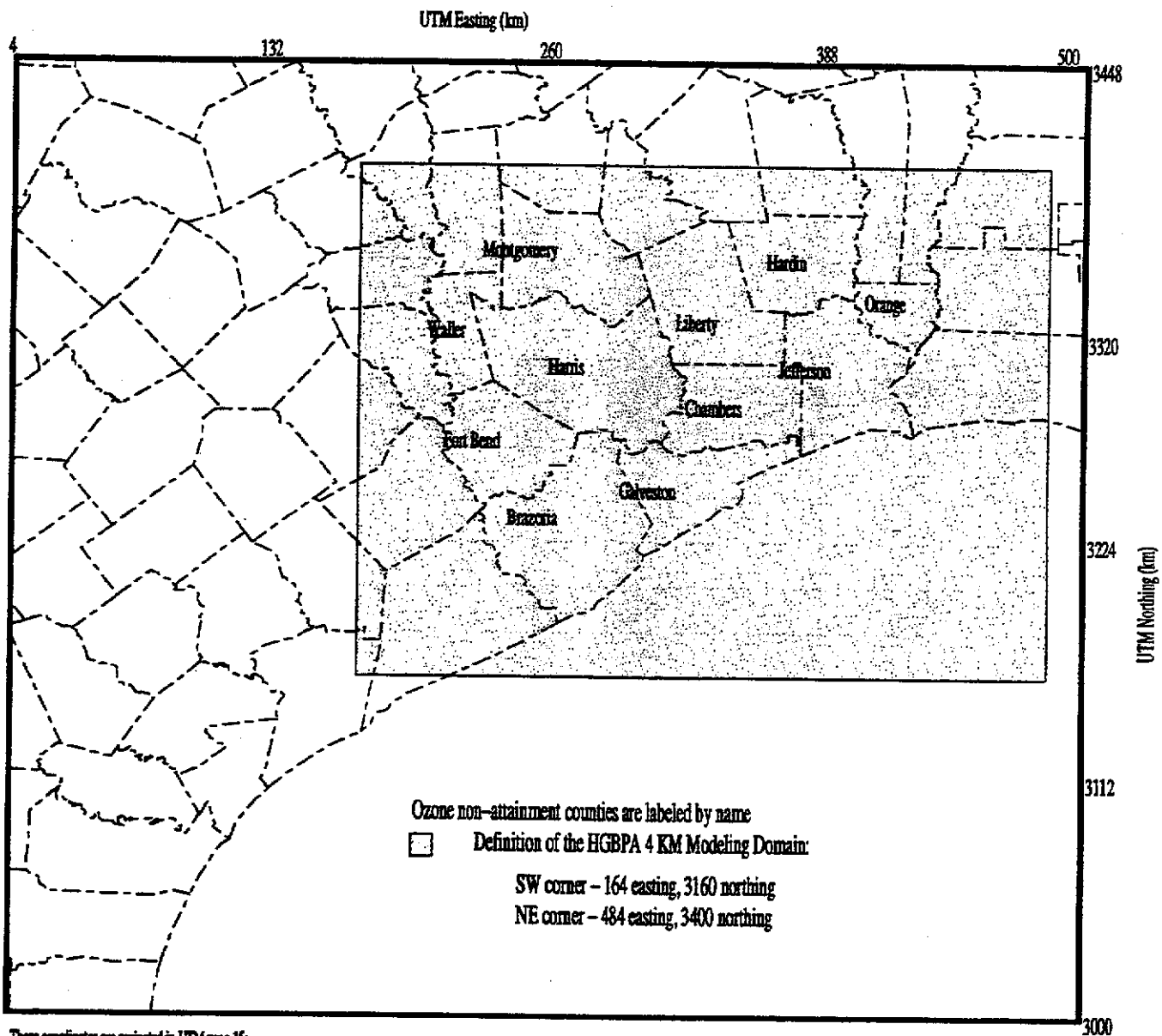
### **Beaumont-Port Arthur Model Performance Summary**

<b>Episode Day</b>	<b>Measured Peak O<sub>2</sub></b>	<b>Modeled Peak O<sub>2</sub></b>	<b>Δ Peak (15-20%)</b>	<b>Relative Bias (5-15%)</b>	<b>Gross Error (30-35%)</b>
September 8, 1993	113	165	47%	12%	20%
September 9, 1993	110	140	28%	2%	14%
September 10, 1993	141	162	15%	-2%	14%
September 11, 1993	116	158	36%	>1%	18%

### **Characteristics of September 6-11, 1993 Modeling Episode**

- Fairly typical summer episode for Houston, Beaumont. Does not represent flow reversal events like August 17-20 episode.

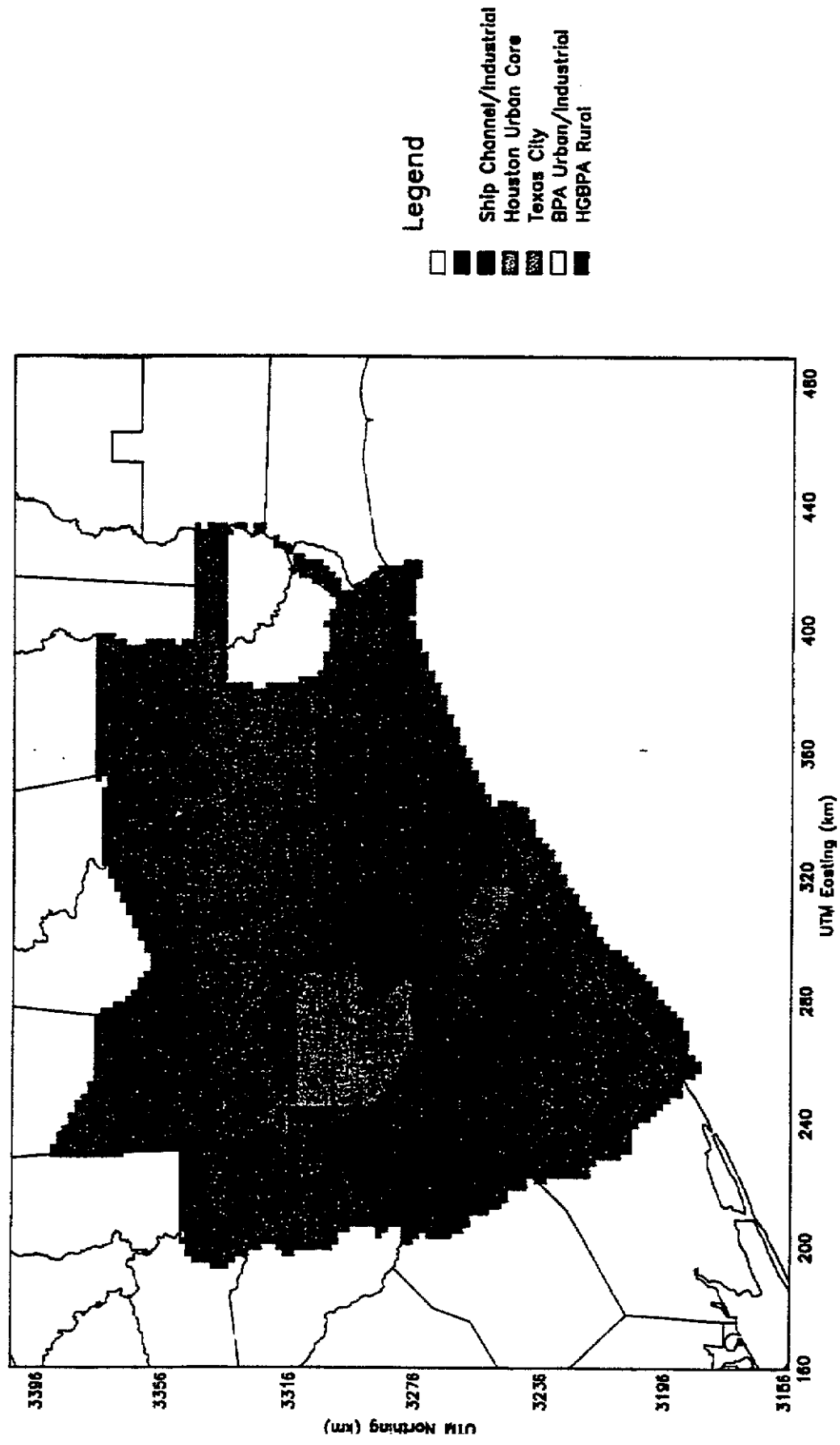
# COAST Modeling Domain



These coordinates are projected in UTM zone 15;

The unit of measurement is kilometer

## Emission Control Zones

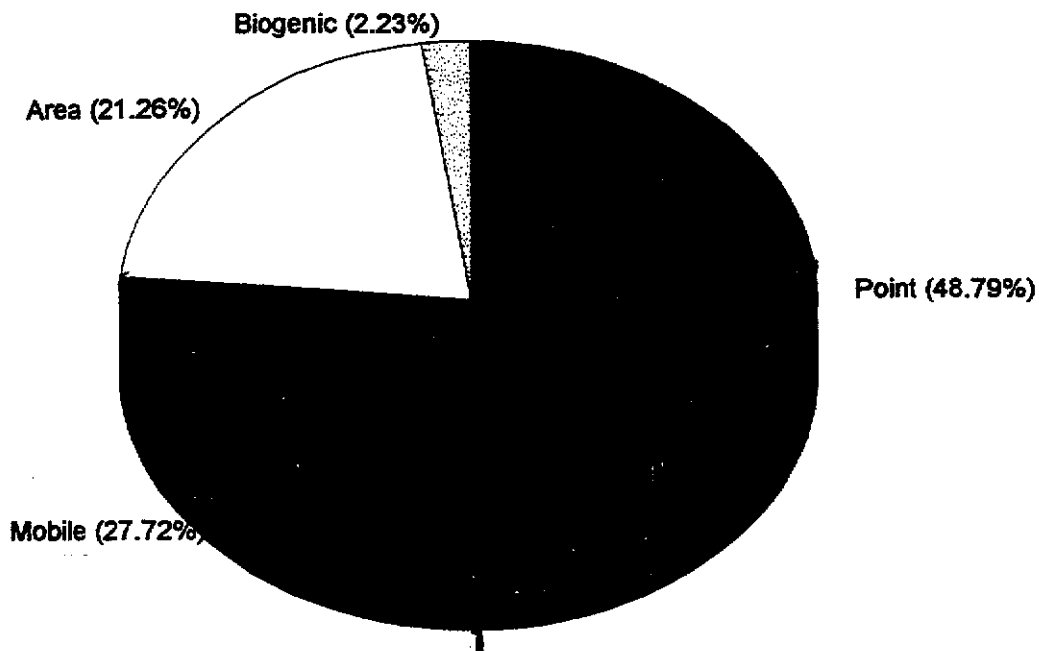




# Projected Year 2007 COAST Emissions 09/08/93, HGBPA Sub-domain

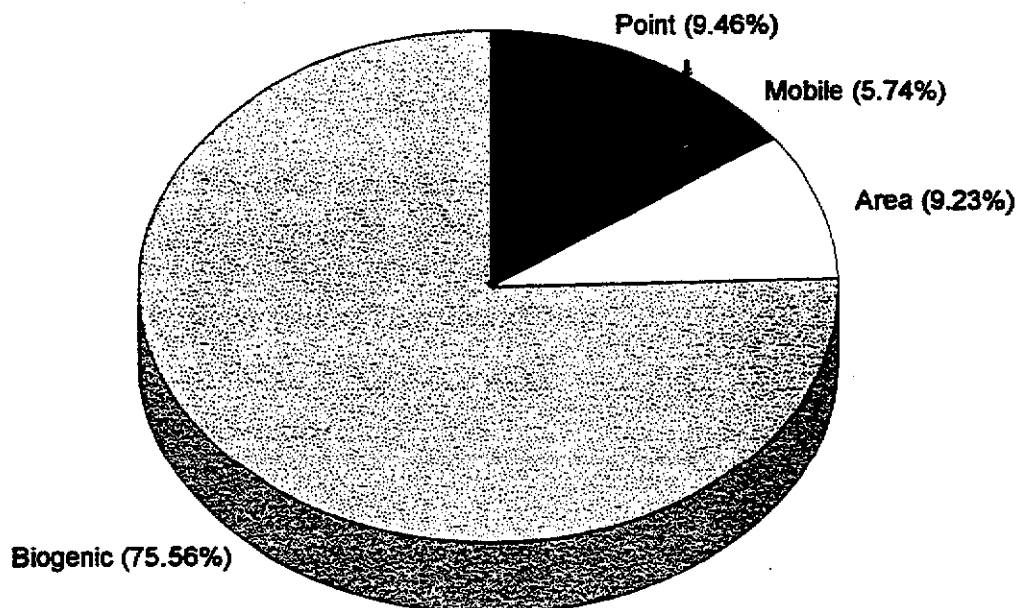
## NOx Emissions (Total = 1972.3 ton/day)

09/08/93



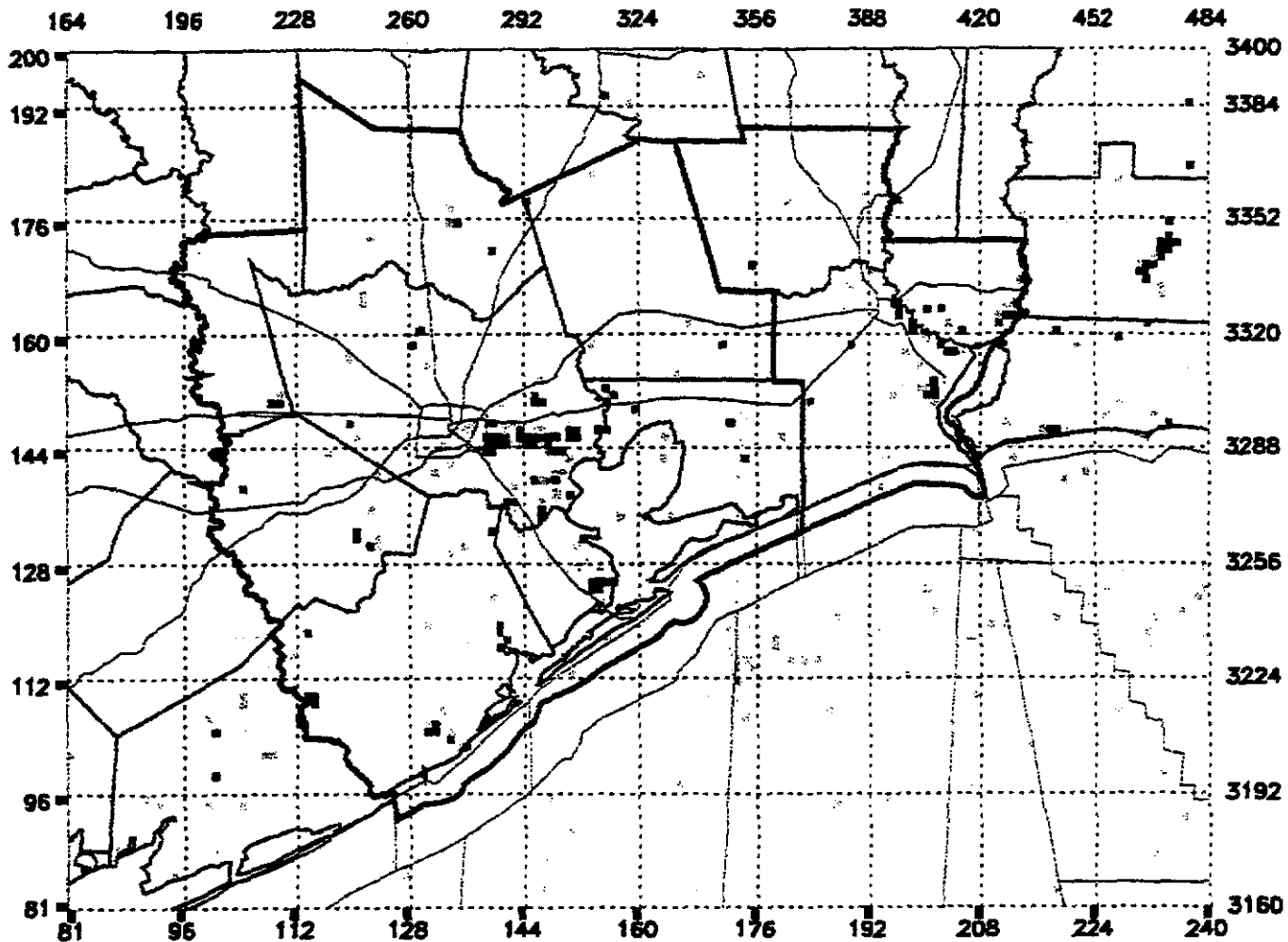
## VOC Emissions (Total = 4863.4 ton/day)

09/08/93



# UAM-V Total Point Source NO<sub>x</sub> Emissions 09/08/93

COAST Year 2007 Base Emissions  
HGBPA Sub-domain (2x2 Km. Grid Cells)



## Emissions Plotted

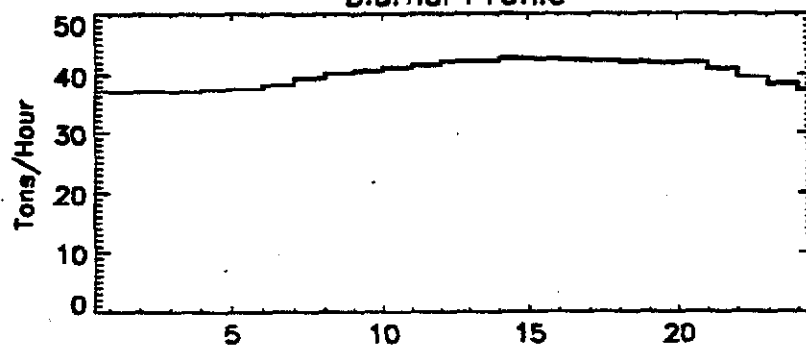
County	Tons/Day
Brazoria	110.94
Chambers	24.72
Fort Bend	97.09
Galveston	117.23
Harris	308.54
Liberty	6.07
Montgomery	10.42
Waller	6.47
H-G SUBTOTAL:	681.48
Hardin	5.85
Jefferson	78.80
Orange	30.79
B-PA SUBTOTAL:	115.45
MAP TOTAL:	962.27

## Legend (Tons/Day)

	< .001		.001-.01		0.01-0.05		0.05-0.1
	0.1-0.5		0.5-1.0		1.0-2.0		> 2.0

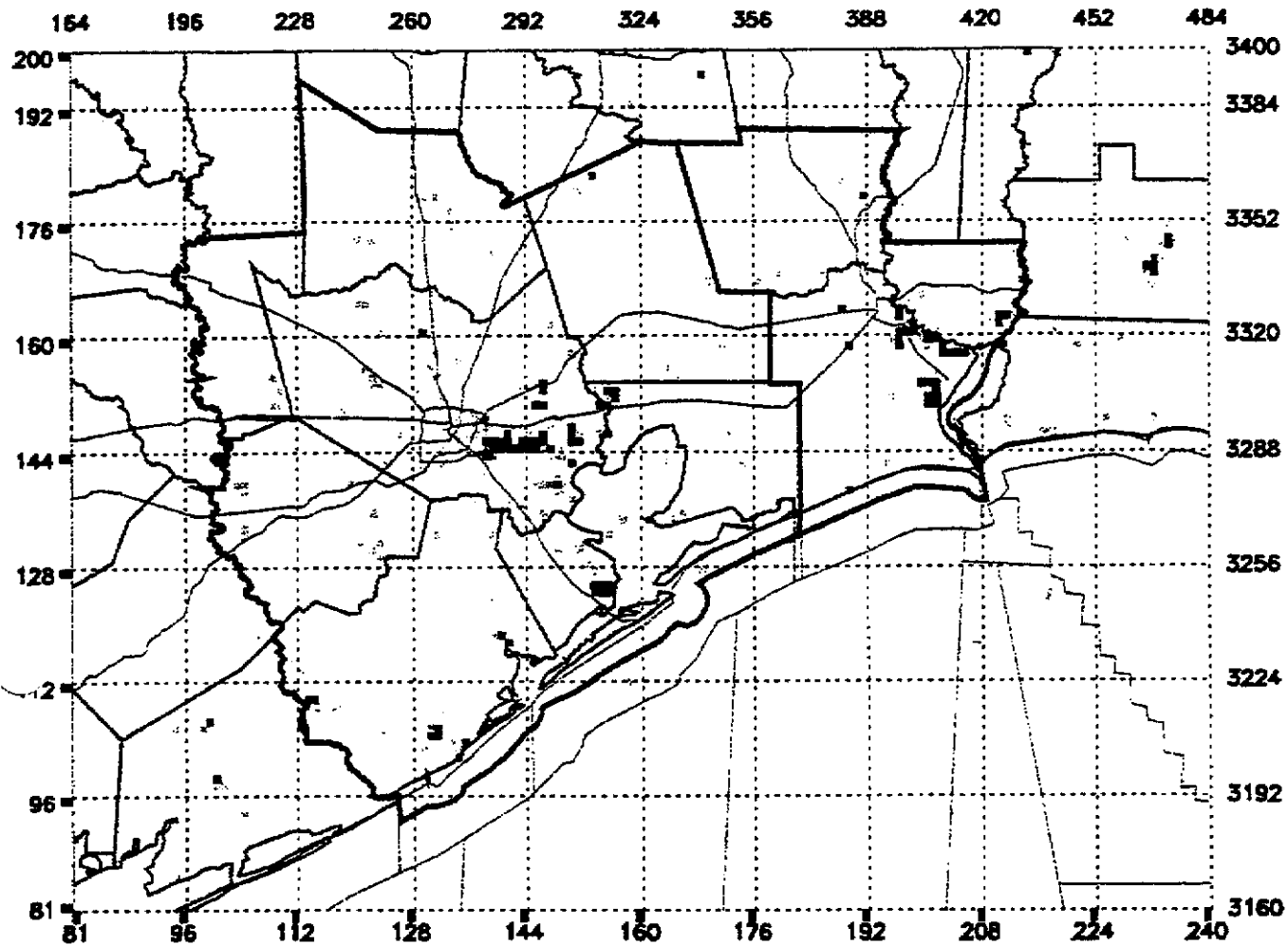
Max Cell: 73.4 tons/day at (245, 3253)

## Diurnal Profile



# UAM-V Total Point Source CB-IV HC Emissions 09/08/93

COAST Year 2007 Base Emissions  
HGBPA Sub-domain (2x2 Km. Grid Cells)



## Emissions Plotted

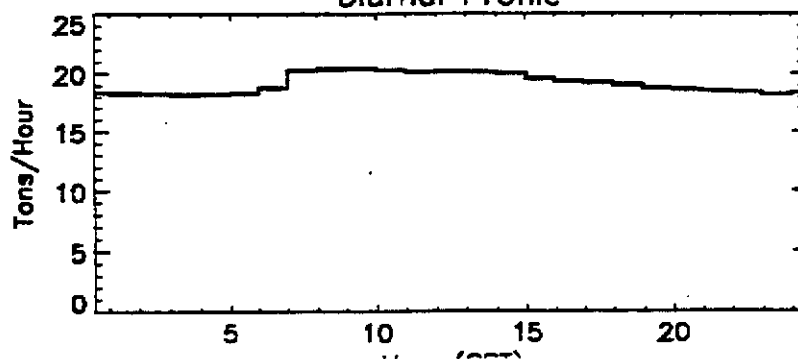
County	Tons/Day
Brazoria	43.27
Chambers	9.60
Fort Bend	3.29
Galveston	43.03
Harris	159.87
Liberty	2.62
Montgomery	2.37
Waller	1.43
H-G SUBTOTAL:	265.46
Hardin	8.16
Jefferson	96.55
Orange	29.10
B-PA SUBTOTAL:	133.81
MAP TOTAL:	460.24

## Legend (Tons/Day)

< .001	.001-.01	0.01-0.05	0.05-0.1
0.1-0.5	0.5-1.0	1.0-2.0	> 2.0

Max Cell: 16.6 tons/day at (315, 3251)

## Diurnal Profile

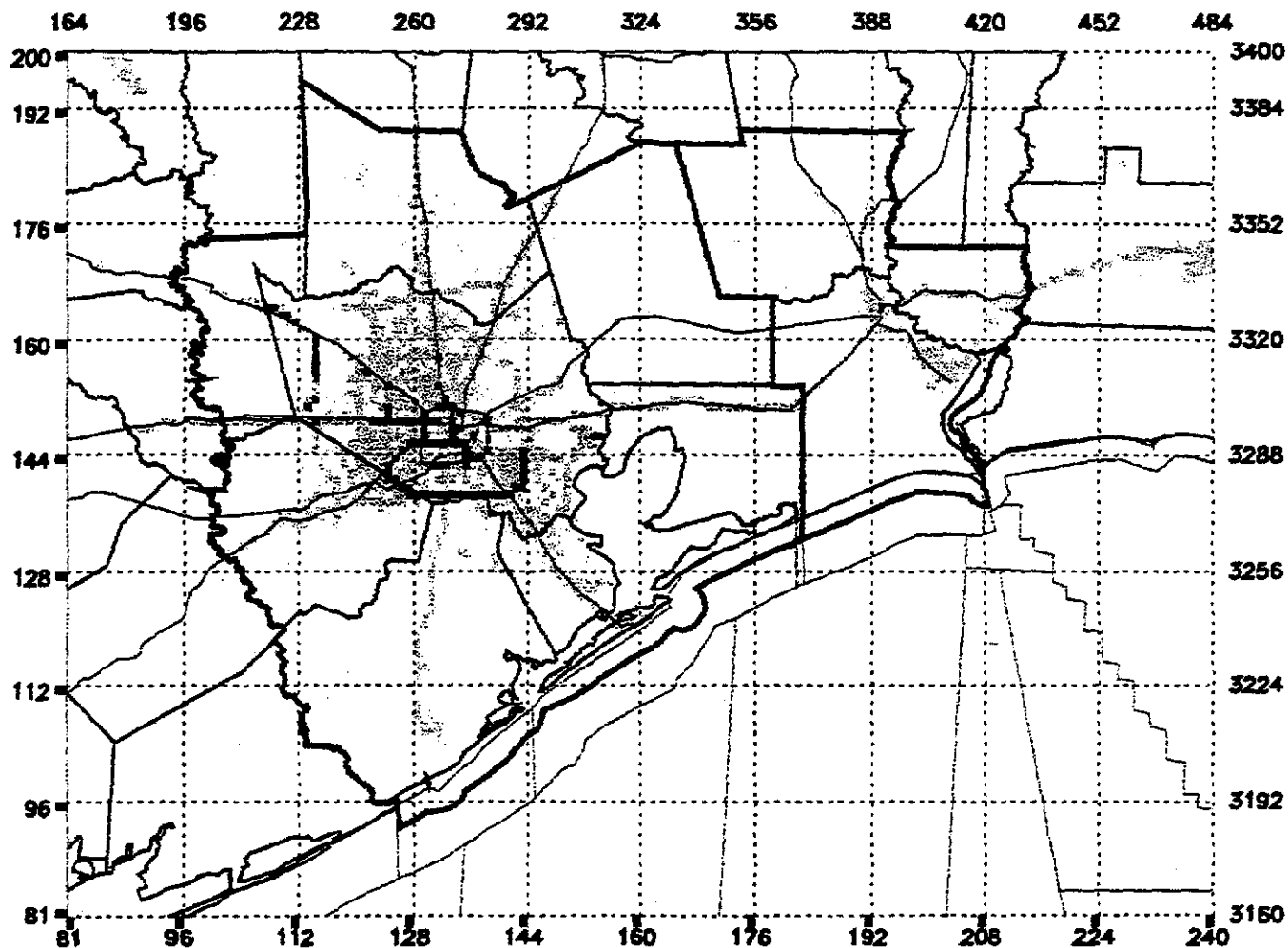




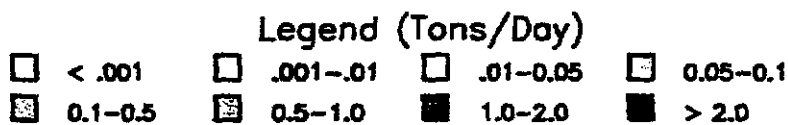
# UAM-V On-Road Mobile Source NO<sub>x</sub> Emissions 09/08/93

COAST Year 2007 Base Emissions

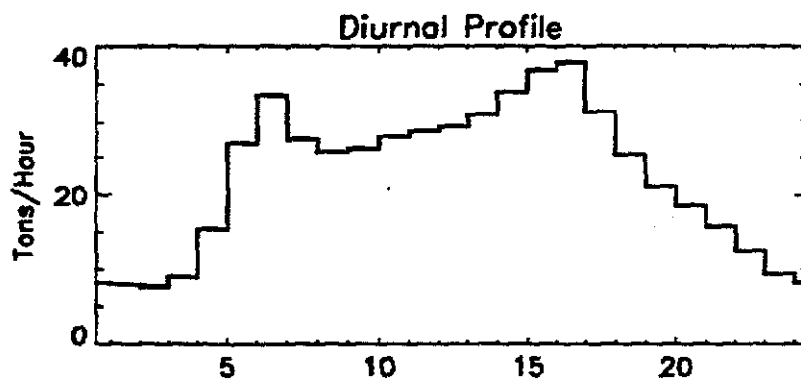
(2x2 Km. Grid Cells)



Emissions Plotted	
County	Tons/Day
Brazoria	17.79
Chambers	6.28
Fort Bend	32.48
Galveston	14.53
Harris	369.36
Liberty	6.03
Montgomery	25.99
Waller	5.92
H-G SUBTOTAL:	478.39
Hardin	4.92
Jefferson	20.57
Orange	8.69
B-PA SUBTOTAL:	34.19
MAP TOTAL:	546.64



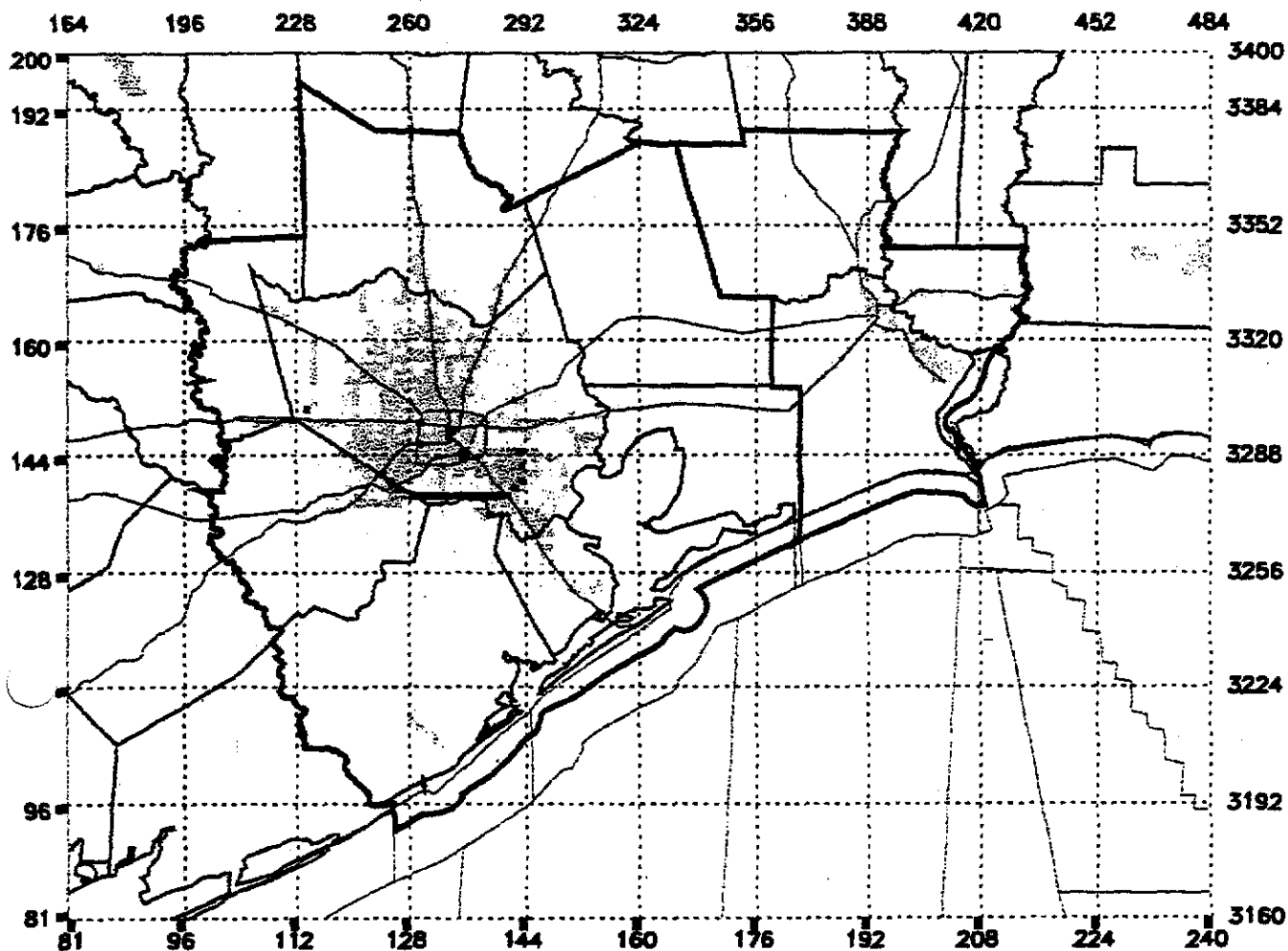
Max Cell: 5.0 tons/day at (255, 3281)



# UAM-V On-Road Mobile Source CB-IV HC Emissions 09/08/93

COAST Year 2007 Base Emissions

(2x2 Km. Grid Cells)



## Emissions Plotted

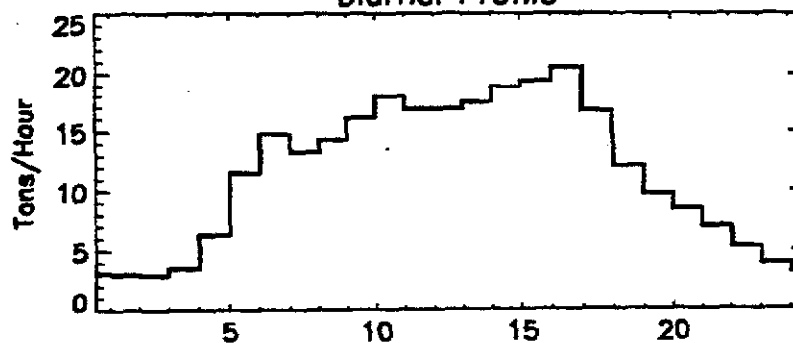
County	Tons/Day
Brazoria	8.35
Chambers	2.36
Fort Bend	15.27
Galveston	7.64
Harris	185.07
Liberty	2.73
Montgomery	11.76
Waller	2.46
H-G SUBTOTAL:	235.63
Hardin	2.49
Jefferson	11.79
Orange	4.08
B-PA SUBTOTAL:	18.36
MAP TOTAL:	279.39

## Legend (Tons/Day)

< .001	.001-.01	.01-0.05	0.05-0.1
0.1-0.5	0.5-1.0	1.0-2.0	> 2.0

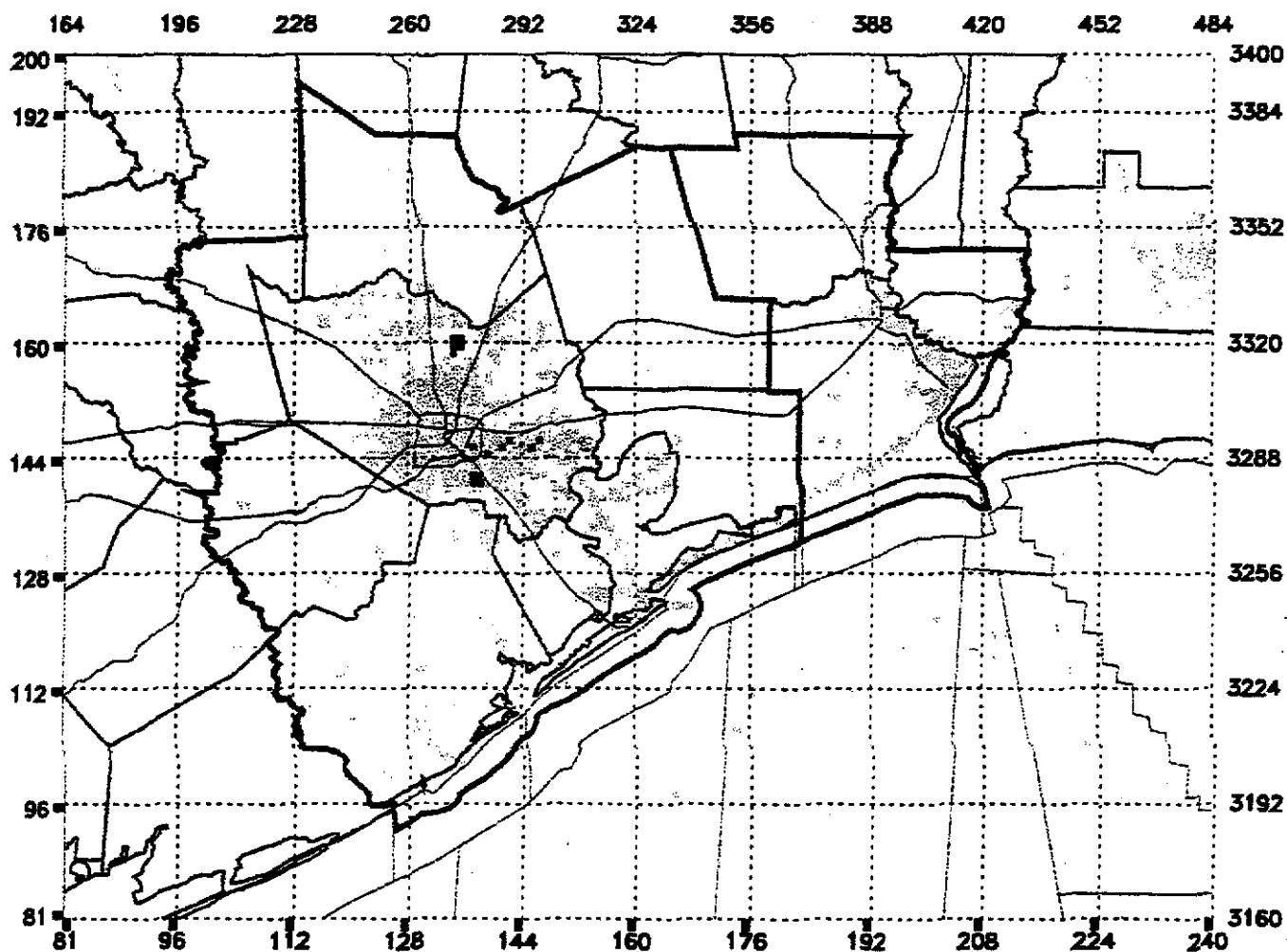
Max Cell: 2.1 tons/day at (257, 3279)

## Diurnal Profile



# UAM-V Area Source NO<sub>x</sub> Emissions 09/08/93

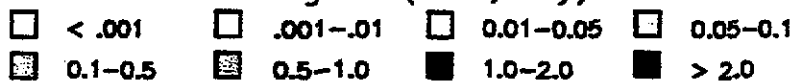
COAST Year 2007 Base Emissions  
HGBPA Sub-domain (2x2 Km. Grid Cells)



## Emissions Plotted

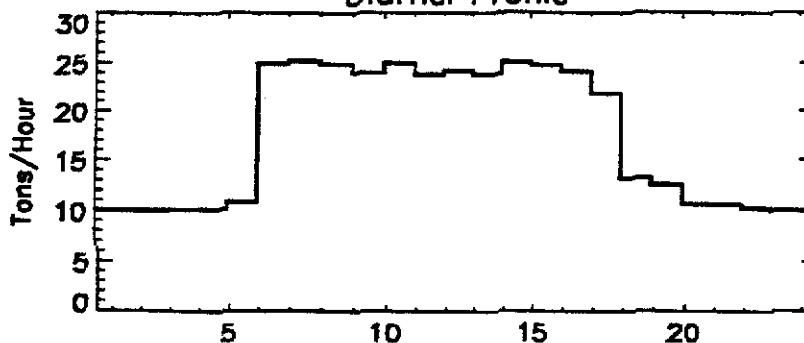
County	Tons/Day
Brazoria	19.59
Chambers	14.77
Fort Bend	8.55
Galveston	31.14
Harris	180.45
Liberty	6.17
Montgomery	9.48
Waller	1.94
H-G SUBTOTAL:	272.10
Hardin	2.94
Jefferson	35.19
Orange	8.36
B-PA SUBTOTAL:	46.49
MAP TOTAL:	419.28

## Legend (Tons/Day)



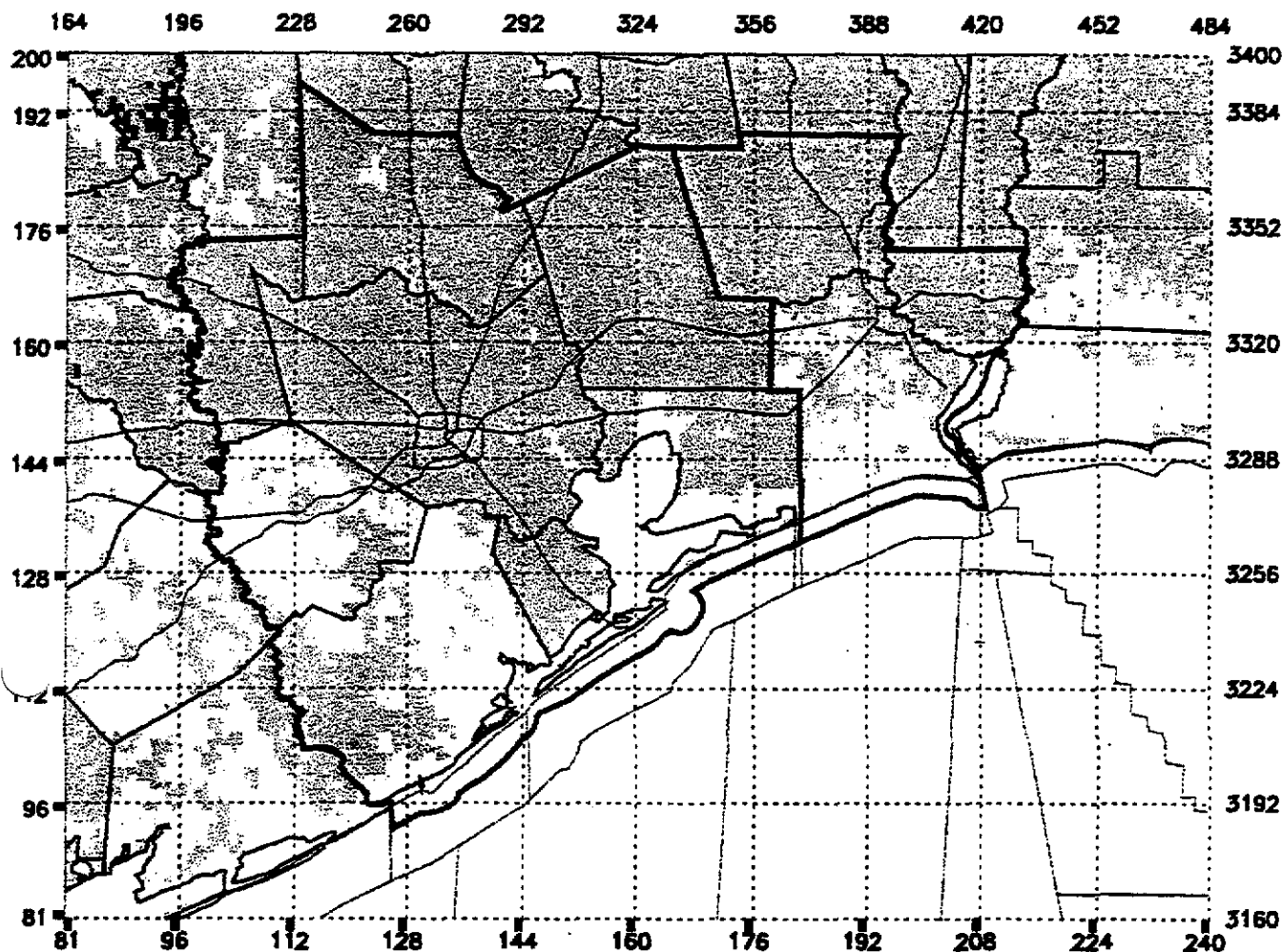
Max Cell: 2.6 tons/day at (273, 3317)

## Diurnal Profile



# UAM-V Biogenic CB-IV HC Emissions 09/08/93

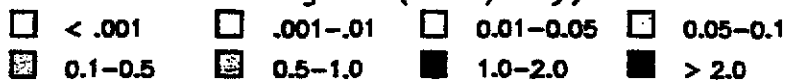
COAST Year 2007 Base Emissions  
HGBPA Sub-domain (2x2 Km. Grid Cells)



## Emissions Plotted

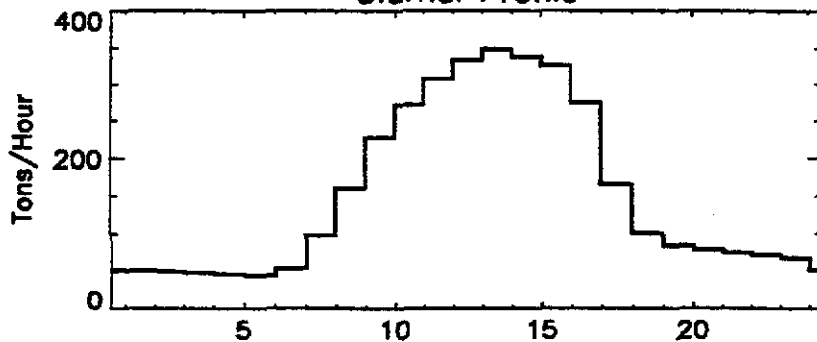
County	Tons/Day
Brazoria	126.83
Chambers	75.95
Fort Bend	45.99
Galveston	45.27
Harris	372.92
Liberty	346.94
Montgomery	365.11
Waller	77.70
H-G SUBTOTAL:	1456.70
Hardin	322.38
Jefferson	100.50
Orange	84.03
B-PA SUBTOTAL:	506.91
MAP TOTAL:	3673.78

## Legend (Tons/Day)



Max Cell: 1.6 tons/day at (189, 3385)

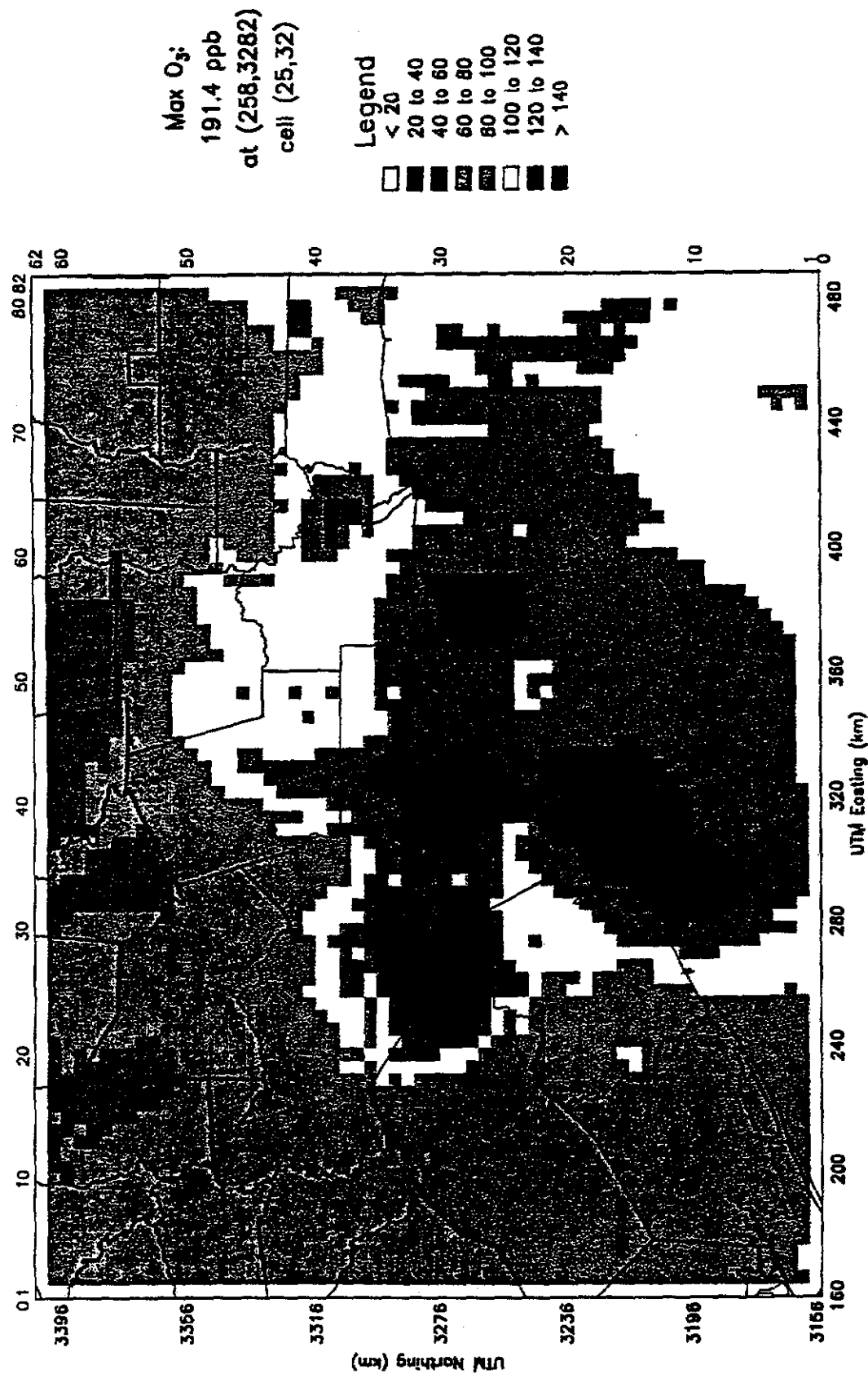
## Diurnal Profile



Daily Maximum Hourly Average O<sub>3</sub> Concentrations (ppb) for 09/08/93

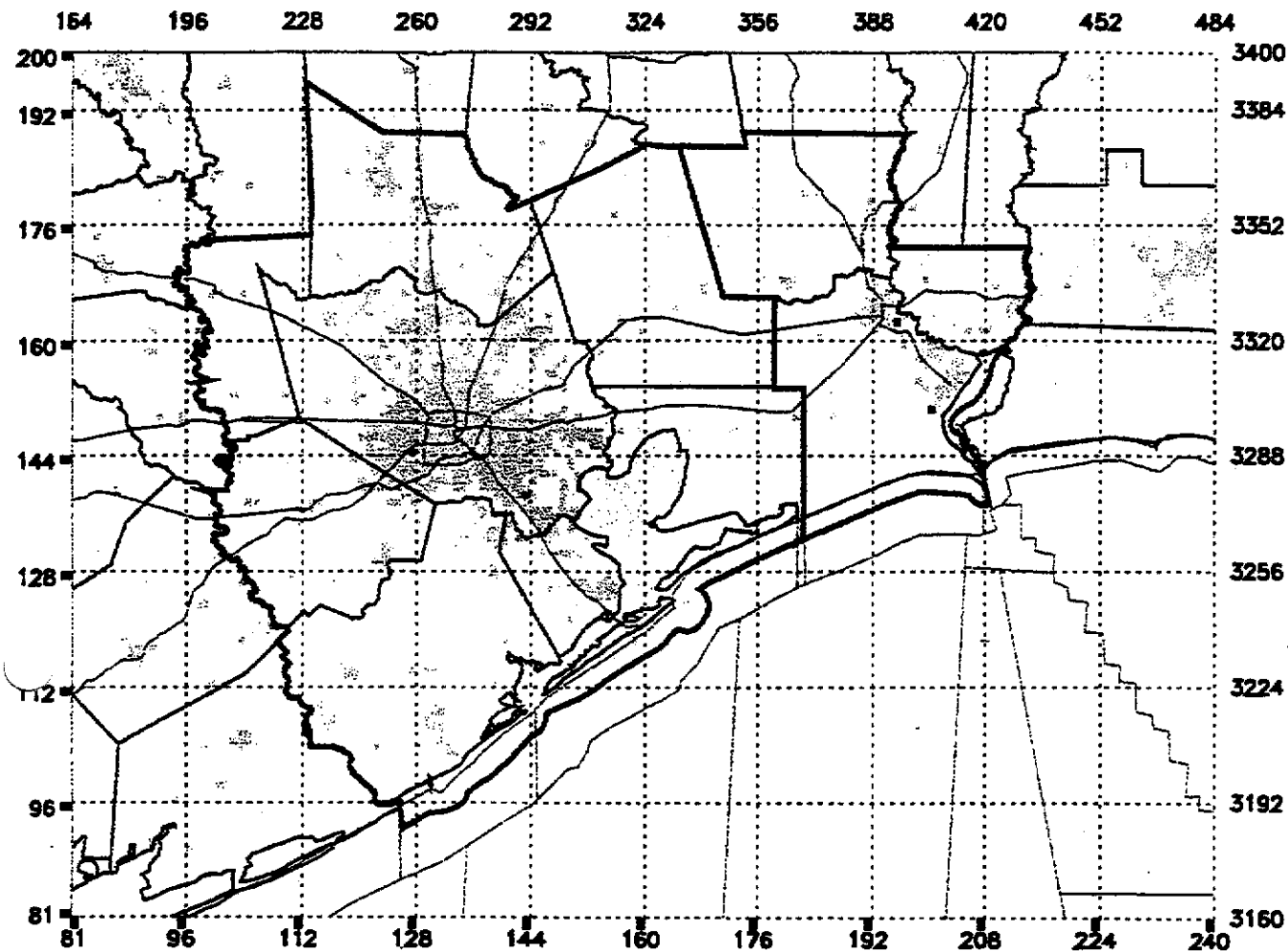
**COAST UAM-V Year 2007 Emission Control: No Reductions**

HG/BPA Subdomain (cell size: 4x4km), Layer 1



# UAM-V Area Source CB-IV HC Emissions 09/08/93

COAST Year 2007 Base Emissions  
HGBPA Sub-domain (2x2 Km. Grid Cells)



## Emissions Plotted

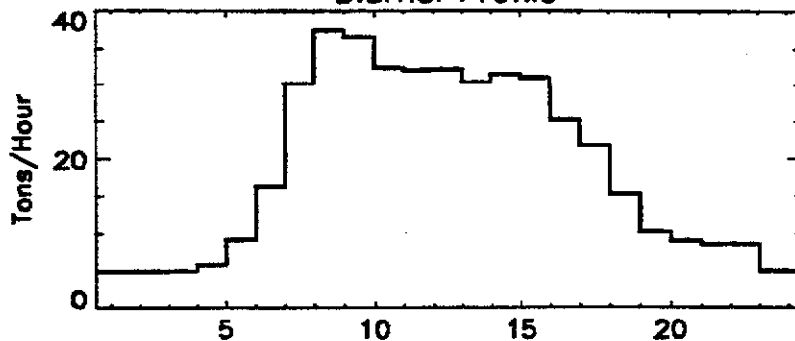
County	Tons/Day
Brazoria	22.50
Chambers	16.81
Fort Bend	15.44
Galveston	23.76
Harris	188.04
Liberty	10.98
Montgomery	23.28
Waller	5.10
H-G SUBTOTAL:	305.90
Hardin	7.48
Jefferson	30.22
Orange	8.67
B-PA SUBTOTAL:	46.37
MAP TOTAL:	449.02

## Legend (Tons/Day)

< .001	.001-.01	0.01-0.05	0.05-0.1
0.1-0.5	0.5-1.0	1.0-2.0	> 2.0

Max Cell: 2.9 tons/day at (395, 3325)

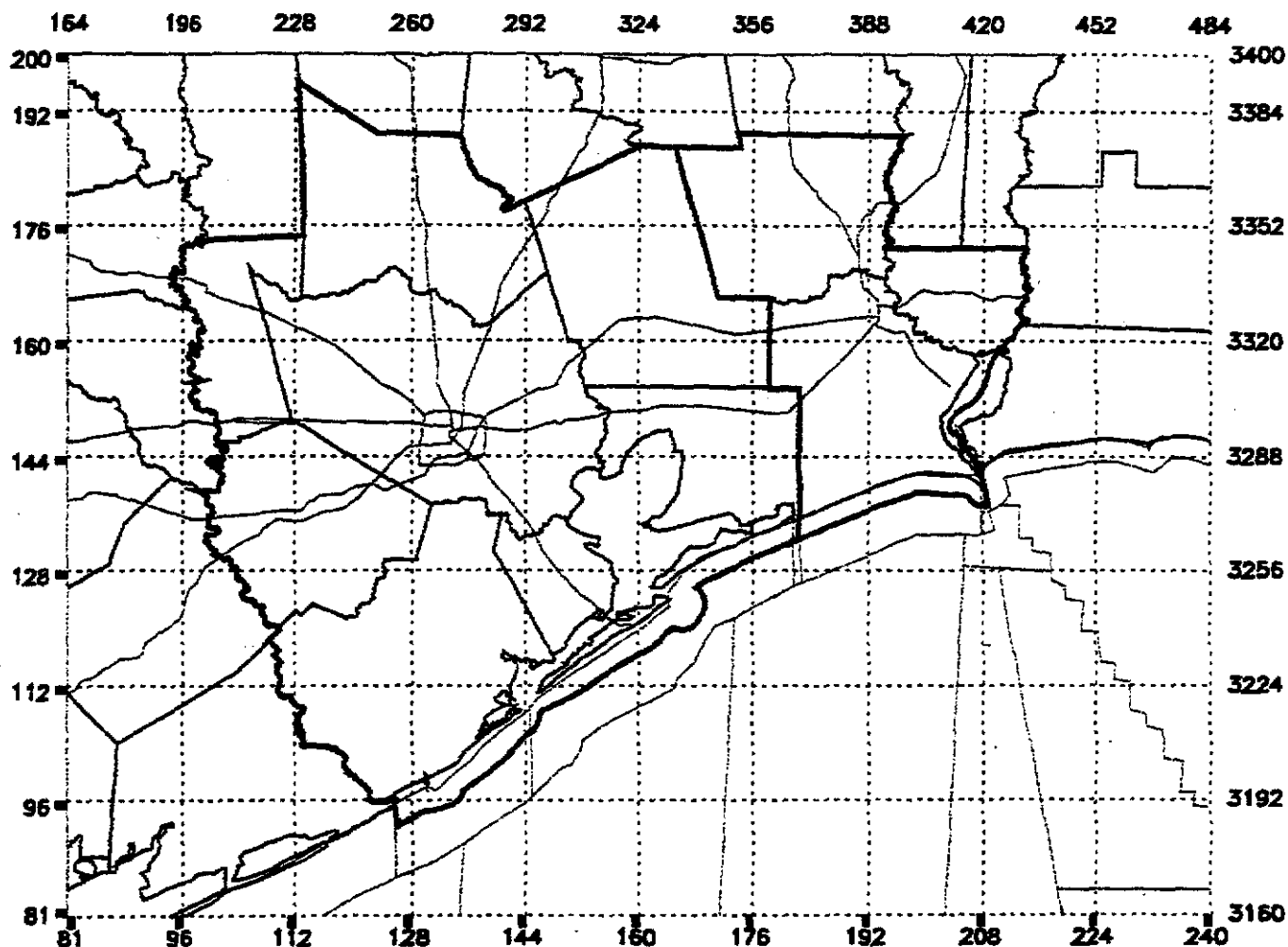
## Diurnal Profile



# UAM-V Biogenic NO<sub>x</sub> Emissions 09/08/93

COAST Year 2007 Base Emissions

HGBPA Sub-domain (2x2 Km. Grid Cells)



## Emissions Plotted

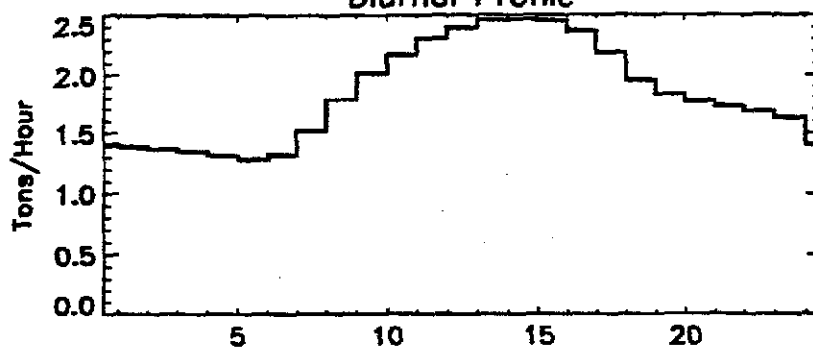
County	Tons/Day
Brazoria	4.44
Chambers	1.91
Fort Bend	4.02
Galveston	1.21
Harris	3.91
Liberty	1.92
Montgomery	0.48
Waller	2.05
H-G SUBTOTAL:	19.93
Hardin	0.23
Jefferson	2.22
Orange	0.32
B-PA SUBTOTAL:	2.76
MAP TOTAL:	44.08

## Legend (Tons/Day)

< .001	.001-.01	0.01-0.05	0.05-0.1
0.1-0.5	0.5-1.0	1.0-2.0	> 2.0

Max Cell: 0.0 tons/day at (175, 3381)

## Diurnal Profile



## **Conclusions from Urban Airshed Modeling Using Data from the Coastal Oxidant Assessment for Southeast Texas**

1. VOC reductions alone will reduce maximum ozone concentrations, but will not be sufficient for attainment.
2. NO<sub>x</sub> reductions can achieve attainment in HGA, but only with overall reductions of 75% and above from point, mobile, and area sources. Decreases in ozone concentration are relatively small until overall NO<sub>x</sub> reductions reach 50% and above.
3. For HGA, NO<sub>x</sub> reductions from point sources alone are not sufficient for attainment, nor are they effective alone in reducing ozone. NO<sub>x</sub> reductions from mobile and area sources are more effective than from point sources, but are not sufficient for attainment.
4. Combined reductions of point source NO<sub>x</sub> and total VOC in the 10-20% range decrease the areal extent of ozone exceedances.
5. For HGA, reductions of VOC and/or NO<sub>x</sub> in the 10-20% range would meet the test for a §182(f) exemption, but reductions above 50% would not. Modeling supporting the original §182(f) exemption showed disbenefits at 50% NO<sub>x</sub> reduction levels, whereas the current modeling shows benefits at this reduction level.
6. Attainment of the new 8-hour standard will require more NO<sub>x</sub> reductions than for the current 1-hour standard.
7. NO<sub>x</sub> reductions from utility point sources alone show little or no benefit in reducing ozone.
8. At levels of NO<sub>x</sub> reduction of 50% and above, NO<sub>x</sub> substitution for VOC may be acceptable under EPA's Rate-of-Progress requirements.



## **Conclusions from Urban Airshed Modeling Using Data from the Coastal Oxidant Assessment for Southeast Texas**

### **Special considerations for BPA:**

- 1. BPA would not qualify for the §182(f) exemption at any range of reductions.**
- 2. Point source NO<sub>x</sub> reductions are beneficial in reducing ozone, but on some modeled days are not sufficient for attainment.**
- 3. Domain-wide reductions in total NO<sub>x</sub> would achieve attainment in the 40-75% range. Both local and non-local reductions may be needed for attainment.**

Due to the length of the document, the figures from this report are not available in electronic file.

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